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Span of Control in Contingency Air Mobility Operations:
The Case for a Tanker Director

By

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Seminar 11

A paper submitted to the faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Military Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

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Introduction

"Tankers turned the tide of the war. They were the backbone of the air campaign...they were the single type of asset I could not have done without."
- Lt Gen Short, Operation ALLIED FORCE C/JFACC¹

The U.S. has crossed into the 21st Century with a new warfighting paradigm that relies on rapid deployment and the extensive use of airpower. Air Mobility Command's (AMC) air refueling tankers are the one key enabler critical to both areas. For this reason they are considered high-demand, joint-use, national assets and must be allocated judiciously and coordinated deftly. Air mobility is a specialized function requiring unique management expertise. So much so, that in times of crisis it has proven essential to insert air mobility leadership and staffing into theaters for oversight of major operations.

This paper investigates the role of the Director of Mobility Forces (DIRMOBFOR) in the tanker command and control structure that stands up to support a joint task force (JTF). Because a great deal of a joint forces commander's (JFC) operational decision-making revolves around tanker coordination and availability, this role has proven vital. However, the DIRMOBFOR is tasked as the coordinating authority for all air mobility assets, inter and intratheater, that support the JTF. This creates friction between AMC's goal of logistical efficiency (as during deployment) and the warfighting JFC's goal of combat effectiveness at efficiency's expense. This dual-hatted coordination of dissimilar AMC and JFC command and control (C2) systems can easily exceed the DIRMOBFOR's effective span of control. Another central issue is that tankers are not airlifters, but have been absorbed into AMC doctrine, controlled by essentially the same C2 structure. Current doctrine for air refueling C2 reflects an over-emphasis on the global airlift network at the expense of air refueling support to theater JTFs.

Airlift and air refueling do not mesh perfectly under the rubric of "air mobility." My thesis is that air mobility and combat-support requirements and C2 systems are different enough to warrant a separate DIRMOBFOR-like function dedicated to theater tanker employment. Thus, the need for a DIRMOBFOR to support a theater JFC concerning all air mobility functions remains valid, *except* for C2 of combat support air refueling. The latter doctrinally-prescribed role exceeds his effective span of control. In light of the competing and legitimate demands on air mobility, especially tankers, theater C2 and the DIRMOBFOR's role need to be recast.

Analysis begins with an explanation of the overarching global air mobility C2 structure and how the JTF contingency structure fits within it. The historical evolution and doctrinal role of the DIRMOBFOR are discussed. Then, the dynamics of the air mobility and combat support C2 structures are contrasted. Finally, the lessons learned from Operation ALLIED FORCE, the most current major theater operation for U.S. airpower, will be examined to highlight problems encountered with the present system.

Competing proposed changes to doctrine are then put forward and evaluated. The author's recommended course of action is subsequently explained. The conclusions reached are relevant because they directly impact the "backbone" of any JFC's air campaign. The relatively simple refinements proposed will go far toward ensuring air refueling capability in any future Joint Task Force operation.

Current Air Mobility Command and Control Structure

To better understand theater air refueling C2, it is appropriate to explain how the current system was developed. In the far-reaching Air Force restructure of 1992, the Strategic Air Command (SAC) was deactivated and its KC-10 and KC-135 air refueling tankers were added to Military Airlift Command's (MAC) strategic airlift force to create the new Air Mobility Command (AMC). Despite the "new" appellation, many participants would argue that the tanker fleet essentially joined the "new MAC" and was merely appended to that major command's C2 structure. While the airlift and air refueling "Global Reach" missions are distinct, global C2 is currently identical.

The Overarching Air Mobility Structure

Air mobility operates in three very distinct operational environments: between theaters (*intertheater*), within a theater (*intratheater*), and, during contingencies, *intratheater* but strictly within a joint task force's (JTF) joint operating area (JOA). These three environments are integrated and synchronized but are separately controlled.³

The command and control diagram in **Figure 1** is complex, but it clearly depicts today's doctrinally-prescribed worldwide air mobility command and control structure. The dark shaded section on the right shows the strategic, AMC-controlled *intertheater* piece. The light shaded section on the left shows the *intratheater*, geographic combatant commander-controlled piece. These two sections make up the peacetime core of the strategic and theater air mobility structure. The global air mobility C2 system can be accurately described as a synthesis of these two sub-systems into an interlocking whole.

AMC's Tanker Airlift Control Center (TACC) at Scott AFB, IL exercises worldwide command and control over strategic mobility forces performing "fort-to-port"

intertheater airlift and air refueling movements. Meanwhile, the geographic combatant commanders are responsible for *intratheater* "port-to-foxhole" airlift and tanker support employment.⁴ In the mature European and Pacific theaters, intratheater air mobility operations are controlled by an Air Mobility Operations Control Center (AMOCC). These AMOCCs act as the theater air component commander's C2 headquarters for planning, coordination, tasking and execution of theater air operations.⁵

The Contingency Joint Task Force (JTF) Air Mobility Structure

The focus of this paper is on the nebulous "in-between" C2 organization that is activated during regional contingencies in support of a JTF. Following the 1991 Persian Gulf War, the deployed air mobility C2 structure was deactivated and most of the pieces consolidated at AMC headquarters in its TACC.⁶

To fill the void left in the theaters, a concept of "global reach laydown" was introduced to enable the necessary air mobility C2 to stand up and deploy during contingencies. The laydown package included air mobility staff manning for an Air Operations Center (AOC) under a Director of Mobility Forces (DIRMOBFOR). This deployable DIRMOBFOR-led concept met the theater JFC's requirement for centralized control of assigned mobility assets, while providing oversight of non-theater assets transiting through under the operational control (OPCON) of U.S. Transportation Command (TRANSCOM).⁷

The JFC's Air Component Commander (JFACC) stands up an AOC to function as the "senior agency of the JFACC from which command and control of air operations are coordinated with other components and Services."⁸ As the central C2 center for air assets, the AOC is essentially the "heart and soul" of contingency air operations.

The AOC is divided into four divisions: Combat Plans, Combat Operations, Strategy, and Air Mobility (AMD). The AMD is a collocated but separate division, as depicted by **Figure 1**'s "box within a box" construct. Resident in the AMD are the separate functional control teams for air mobility (AMCT), airlift (ALCT), and air refueling (ARCT), and a separate Air Mobility Element (AME).

The ARCT is responsible for planning, tasking, and executing all air refueling missions employing tankers attached or assigned to the JTF. It is responsible for integrating these tanker missions into the JFACC's daily Air Tasking Order (ATO) and the global AMC mission tracking system. The ARCT collocated with the combat plans division enhances ATO development and with the combat operations division allows rapid changes during mission execution.

The AME inside the AMD is dedicated to intertheater lift as it applies to the JTF but, significantly, falls under the OPCON of TACC back at AMC headquarters. It exists as TACC's forward C2 node and is shown in **Figure 1** as linked to TACC for that reason. The AME deploys from AMC and teams up with existing theater airlift personnel in the AMD to control AMC intertheater missions. According to joint and Service doctrine, the DIRMOBFOR provides direction to the AMD and AME, and is responsible for coordinating all air mobility functions for the JFACC. This prescribed relationship fulfills the centralization of control tenet at the TACC or AMOCC level, while allowing decentralization of many executive functions to the DIRMOBFOR.⁹

The Evolution of the DIRMObFOR Function

Air mobility is a specialized function requiring unique management expertise. In contrast, virtually all senior theater air leaders are assigned from the ranks of fighter and bomber aviators who generally have limited experience in air mobility operations. In times of crisis, it has therefore proven essential to insert air mobility leadership into theater to oversee major air mobility operations.

The fabled Berlin Airlift of 1948-49 is a case where airlift expertise proved invaluable. The operation was conceived and commanded by Maj Gen Curtis LeMay, Commander of U.S. Air Forces Europe (USAFE). Yet, despite his reputation and demonstrated ability to gather the needed strategic airlifters from all over the world to support the massive intratheater effort, he was initially ineffective in carrying out the sustainment mission. It was the arrival in theater of the veteran airlift commander Maj Gen William Tunner that turned the situation around. Under Tunner's expert direction, assets, airfields, routes and timing were orchestrated into a classic model of efficiency.¹⁰

The DIRMObFOR concept itself is rooted deeply in the forward-based MAC C2 structure that existed during the Cold War. MAC operated a global system built around permanently theater-assigned Airlift Divisions (ALD). A Commander of Airlift Forces (COMALF) commanded the ALDs. This senior C2 position fulfilled the theater's need to have an airlift expert manage those assets (mainly intratheater C-130s) assigned to them. The COMALF was formally granted OPCON of all theater-owned airlift assets for day-to-day scheduling and utilization. This alleviated theater CINC concerns about centralized control of their assets. However, the COMALF also managed strategic

(MAC) assets transiting the theater while still wearing his ALD hat, allowing the decentralization of execution that MAC desired.¹¹

Operations in the Gulf War revalidated the need for an expert senior leader to coordinate airlift assets at the theater level. MAC had in place a COMALF, whose Airlift Control Center (ALCC) concentrated on coordination of the massive inter and intratheater airlift operations undertaken in support of U.S. Central Command (CENTCOM). While in a subordinate capacity to the theater JFACC, Lt Gen Horner, COMALF was also dual-hatted, in that he was responsible to CINCMAC for "all aspects of (MAC) airlift operations" flowing in and out of theater.¹²

On the tanker side, it was clear from the beginning of the crisis that the theater needed senior air refueling C2 staff assistance. The Joint Chiefs of Staff and CENTCOM planners had "woefully underestimated" initial air refueling requirements. In fact, "no other aspect of CENTAF's early planning assumptions fell so far short of what combat operations required."¹³ Tanker deployment orders changed daily as various commanders and staffs established force deployment priorities, levels of logistics support, and beddown locations. Different fighter aircraft from various Services and coalition partners had different refueling requirements. Their order of deployment affected the number of tankers needed on the Atlantic "Air Bridge"¹⁴ and in the AOR.¹⁵

SAC took the novel step of inserting a Strategic Forces Commander (STRATFOR) and planning team directly into the CENTAF CAOC in Riyadh to assist in more effective deployment planning. The previously shortsighted tanker requirements (64 requested for in an operation that eventually required over 300) were symptomatic of the

fighter/strike community's inability to recognize its dependence on air refueling capability as well as their inexperience in conducting effective tanker planning.

Poor planning coordination initially hampered theater employment of tankers during the INSTANT THUNDER air campaign. Tanker aircraft were not listed in the CENTCOM "black hole" master attack plan.¹⁶ Tanker taskings were added almost as an afterthought. Brig Gen Glosson, the senior planner, admitted a "shortfall" in the tanker planning area. The STRATFOR commented that tankers were under-appreciated and always just "assumed" in operational planning.¹⁷

Throughout the Gulf War, SAC successfully performed a juggling act with its tanker force to meet both its primary Single Integrated Operational Plan (SIOP) nuclear alert commitment and CENTCOM air refueling requirements. The supporting commitment of over 300 tankers severely stretched SAC's fleet. General Schwarzkopf stated that the requirement for so many tankers "...almost blew my mind."¹⁸ Yet, the STRATFOR not only gave the theater CINC the higher numbers he actually needed, but also enabled the JCS to accurately balance tanker allocation critical to both combatant commands.

COMALF and STRATFOR existed in separate functional director roles for the JFACC. However, it is important to note that while the airlift coordination center was a separate entity from the CAOC, the tanker planning and operations staffs worked as an integral, collocated team.¹⁹ It is difficult to envision how a single DIRMBOFOR could have functioned effectively as a combined STRATFOR and COMALF, given the scale of DESERT STORM tanker and airlift operations. The effective span of his control would likely have been exceeded; yet, current joint doctrine assigns one airman both these roles.

DIRMOBFOR in “Air Mobility” Doctrine

Melding tanker and airlift assets into generic “mobility” assets has generally worked well. The missions are interrelated and great efficiencies have been realized in the overall Defense Transportation System as a result. However, doctrine under the overarching rubric of “air mobility” has simply evolved directly from AMC’s parent airlift doctrine. One former CINCTrans has caustically labeled it a “one-shoe-fits-all” approach. He argues that airlift and tankers have “their own methodologies” and employment procedures. In his view “integration was not to mean literal homogenization” of the two functions.²⁰

Still, it appears from examining previous, current, and draft doctrine that the DIRMOBFOR’s defined role is really just that of a deployable COMALF whose span of control has been expanded to include tankers. While future doctrine is getting more refined, the most current joint, Air Force and AMC publications have all simply replaced the word “airlift” with “air mobility” in most definitions and topic discussions, unless the subject specifically refers to a unique air refueling function.²¹ In Joint Publication 1-02, *Department of Defense Dictionary of Military and Associated Terms*, the DIRMOBFOR is defined as:

“a senior officer familiar with the area of operations (who)... possesses an extensive background in *airlift* operations. When designated serves as the designated agent for *airlift* issues...exercises coordinating authority ...in order to expedite *airlift* issues.”²²

While it is clear that doctrine is often updated at a painfully slow pace, the point remains that the basic airlift-centric functions of the DIRMOBFOR have remained unchanged except for the wording change to “air mobility.” Air refueling responsibilities

have merely been added to the older, already lengthy job description. This is especially true as they relate to the topic of theater tanker employment and coordination. Air Force Doctrine Document 2-6.2, *Air Refueling* adds to the JP 1-02 definition:

“the DIRMOBFOR provides direction for all intertheater air refueling missions within the deployed AOR, and is the primary interface for intertheater air refueling and intratheater operations. The DIRMOBFOR is the JFACC’s primary advisor for tanker allocation and apportionment decisions, and for developing an air refueling CONOPS for the JFACC’s air campaign plan. The DIRMOBFOR ensures that all air refueling assets are used efficiently and effectively in support of both JFACC and JFC objectives. In order to achieve unity of effort, the DIRMOBFOR must coordinate with the AOC director to ensure all air mobility operations supporting the JFC are fully integrated with the ATO cycle and deconflicted with other air operations. The DIRMOBFOR’s primary agency for this process is the AMD of the AOC.”²³

Clearly, current doctrine has overstretched the DIRMOBFOR and the AMD’s span of control across a wide range of interrelated mobility operations that in the Gulf War existed as separate spheres with separate concepts of operation.

The Dichotomy of Air Mobility and Combat Support Air Refueling C2

Tanker missions supporting deploying fighters crossing the intertheater “air bridge” are essentially identical to intratheater missions over inland seas in combat support of fighters enroute to drop their bombs. The C2 structures that control these two cosmetically equal operations, though, are as different as the fighter missions they support. The former is an “air mobility” mission, while the latter is defined as “combat support.” The former is centrally controlled by TACC, while the latter would be controlled by the CAOC in theater. When fighters deploy in support of the JFC, the DIRMOBFOR assists in tracking and coordinating the mission via the AME. In contrast he would “direct” the CAOC’s AMD in planning and integrating the combat support mission. A dichotomy thus exists in the concept of operations of the two C2 structures.

Air Mobility C2

Air mobility missions are driven by the joint movement process, which begins with a validated theater requirement and ends with the delivery of fuel or cargo. Air mobility planners use the Joint Planning and Execution System (JOPES) and other unique movement C3 systems to translate requirements and coordinate missions.²⁴

Like the private cargo transportation networks of air freight companies such as FedEx and UPS, the airlift system focuses its missions and movements on transporting identified cargo from point A to B. There is a clear beginning and a clear end. In logistical terminology, it is a “pull” system that strives for *efficiency*. Aircraft are not even dispatched unless there is a specified and validated load to be moved. The efficiencies provided by this type of system have proven the most effective way to centrally control airlift. It is the AMC and TRANSCOM preferred method of providing air refueling and airlift support to the customer.

Combat Support C2

A JTF AOC centrally controls the total air effort with a cyclical scheduling system. It must produce a daily plan of concerted operations known as the Air Tasking Order (ATO). The divisions inside the AOC are designed to do just that. Based on a 72 to 96 hour rolling window, the combat planning division refines future day preliminary ATOs while the current day is being executed by the combat operations division. Theater Assigned tankers are integrated into this cyclical process via elements of the AMD's ARCT. Unlike the air mobility system, the ATO cycle has no defined end point other than the termination of the JFC's mission.

In logistical terms combat support refueling uses a "push" system. That is, a certain amount of tanker fuel is put aloft to be used by receivers, both scheduled and unscheduled. Spare and short-notice-launch tankers are used to cover emergencies, such as Combat Search and Rescue. Three tankers might be assigned against missions that end up requiring only two, for instance. For combat support *effectiveness* is paramount, efficiency is secondary.

This dichotomy must be understood because current doctrine forces the DIRMBOFOR and the air refueling planners in the AMD to straddle the two divergent C2 systems. The JFACC's CAOC director controls the ATO process and is concerned only with the effectiveness of the tankers combat-supporting his AOR. The AMC TACC, conversely, demands the lowest possible percentage of its finite tanker fleet be used efficiently because AMC supports the taskings of multiple combatant commanders.

ALLIED FORCE

With 294 crews and 175 tankers involved, NATO Operation ALLIED FORCE/U.S. Operation NOBLE ANVIL was the most tanker-intensive operation since DESERT SHIELD and DESERT STORM.²⁵ According to its vice commander, "USAFE made a concerted effort to implement the body of Air Force doctrine" in organizing and orchestrating theater mobility.²⁶ Yet the DIRMBOFOR and his staff arrived to find an AOR C2 structure that had existed since 1993 and had been stripped down and tailored to Bosnian peacekeeping operations, not a major air operation. The CAOC they found at Vicenza Air Base, Italy lacked an AMD as well as a strategy division. It did contain a smaller Regional Air Movement Coordination Center (RAMCC) that existed totally separate from the CAOC structure. Instead of conforming to the doctrinal structure shown

in **Figure 1** and collocating inside the CAOC, the DIRMObFOR set up his AMD at Ramstein Air Base in Germany. The RAMCC took on the role of his “AMD forward.”²⁷

This departure from doctrine had its consequences, but the DIRMObFOR's reasoning can be accepted as logical. First of all, despite initially being the DIRMObFOR for ALLIED FORCE, he was tasked with the same function for three other concurrent operations: Operation SHINING HOPE (humanitarian assistance); Task Force Hawk (Apache helicopter movement to Albania); and Operation PAPA BEAR (increased joint deployments in support of all of the above). Second, because these operations were tasked to CINCEUR, appending his operations onto the existing USAFE AMOCC allowed for a single C2 layer to centrally coordinate all concurrent theater air mobility operations.²⁸ Third, the C/JFACC, Lt Gen Short, had already chosen to ignore doctrine by confining his DIRMObFOR to directing only deployment, sustainment, and redeployment “air mobility” refueling missions. The JFACC wished to keep tight control of all *combat support* tankers over which he had OPGON.²⁹

“The Void”

The positioning of the DIRMObFOR and the AMD (including the ARCT) at Ramstein created a void in both senior air mobility leadership and in tanker staffing in the CAOC. The problem was not readily apparent until it became obvious that the envisioned two to three day long air campaign went on for several weeks. At the same time, NATO initiated a major reinforcement effort. These two factors overwhelmed the small tanker C2 staff resident in the CAOC. The officer in charge, an O-4, was hamstrung by low rank and lack of manning. This “AMD forward,” as the DIRMObFOR described it, was left

task saturated with ATO planning, execution, tanker beddown, on the job training of augmentees, and a myriad of others to deal with.³⁰

More importantly, in lieu of a resident DIRMObFOR, the "AMD forward" was charged with making up tanker requirements. Later, as the requests for tankers grew to consume almost half of the Air Force tanker fleet, the Joint Staff became alarmed by the number of tanker requests coming from the JFC's staff. In the face of political and basing restrictions, the growth of the aerial attack force, poor weather, and the emphasis of effectiveness over efficiency, the requested requirements were perceived larger than might otherwise seem necessary.³¹ In any case, tanker doctrine specifically assigns judgment of tanker requirements and allocation issues to the DIRMObFOR.³² He has the dual-hatted task of assisting the JFC in properly specifying his true needs, while simultaneously acting as an on-scene liaison to the TACC commander and TRANSCOM J3/4 to help them anticipate taskings. He never played that doctrinally-assigned role.

Given the scale of the operations and their critically high level of interest, the JFC and AMC mutually agreed to send out a senior *tanker* officer, Col Thomas Stickford, (and his staff) to fill the belatedly recognized void at Vicenza. Because the JFACC did not want a "second DIRMObFOR" in his CAOC, he assumed the title of "Tanker Director." Regardless of the nomenclature, the role was equivalent in function for combat-support tanker matters. Arriving a full month after hostilities started, the Tanker Director's main concerns were beddown basing options and deployment flow coordination for Operation PAPA BEAR. There then existed a clear division of labor that is at odds with existing doctrine because, according to the Tanker Director, "(the DIRMObFOR) took care of airlift, and I took care of tankers."³³

Options for Doctrine Change

From LeMay in 1949, to Horner in 1989, to Short in 1999, the JFACC found he needed a senior air mobility expert to coordinate air mobility operations. The need for air mobility expertise has been recognized and incorporated into current doctrine as the DIRMObFOR. As evidenced by Operation DESERT STORM and Operation ALLIED FORCE, the air mobility and combat-support C2 systems are different enough to warrant separate senior leadership coordination. The lesson from DESERT STORM was probably missed because the dichotomy was transparent, being de facto incorporated in the dual C2 structures of SAC and MAC as they existed at the time. The ALLIED FORCE major theater campaign for airpower has revalidated the concept. Several competing proposals have been put forward.

First is to change nothing. This course of action contends that current doctrine is sufficient and was simply not followed to the letter. The DIRMObFOR and the AMD were repositioned by the JFACC and not permanently collocated with the CAOC, as they doctrinally should have been. This left a junior officer and an inadequate staff to handle tanker planning and coordination. While the DIRMObFOR, an airlifter by trade, was present in theater, his span of control was extended across five separate and nearly simultaneous air mobility operations in the AOR. Moreover, both the JFACC and AMC recognized the need for another senior leader to deploy to the CAOC as Tanker Director, implying tanker-specific assistance was badly needed.

The second option is to provide for multiple DIRMObFOR positions as necessary. This brings up unity of command issues that are cautioned against in current doctrine. Having multiple DIRMObFORs defeats the purpose of the position as a single-

point deployable director solely responsible for all air mobility coordination in support of a JTF.

Next is the USAFE and PACAF (mature theater) proposal to make the existing AMOCC commander the DIRMOBFOR. This also defeats the purpose because the theater AMOCC is responsible for the support of the geographic combatant commander's overall theater movement. This commander should not move forward into a sector (AO) because theater C2 will still be necessary, especially for simultaneous operations.

The final, and recommended, doctrine change option is to codify and incorporate the "Tanker Director" function as it was demonstrated at Vicenza. ALLIED FORCE validated the need for a senior tanker-specific representative, resident (**Figure 2**) in the AOC to advise the JFACC on combat support air refueling issues such as allocation, beddown, and tactics. The functions of this position should be those currently listed under the DIRMOBFOR in AFDD 2-6.2, chapter 3, as they pertain to contingency operations.³⁴

Additionally, tanker planners and executors should be formally integrated in the Strategy, Combat Plans, and Combat Operations divisions of the AOC instead of being "stove-piped" in the ARCT of the Air Mobility Division. This recommendation was strongly urged by all interviewed ALLIED FORCE participants. For unity of command, this integrated staff should answer to the respective division chiefs and the AOC director, reserving a DIRMOBFOR-like directive authority for the Tanker Director. This standardized arrangement would free the DIRMOBFOR to concentrate exclusively on the air mobility throughput issues that are the true core of his function, thus providing a JFC commander with more clearly focused support of inter and intratheater movement.

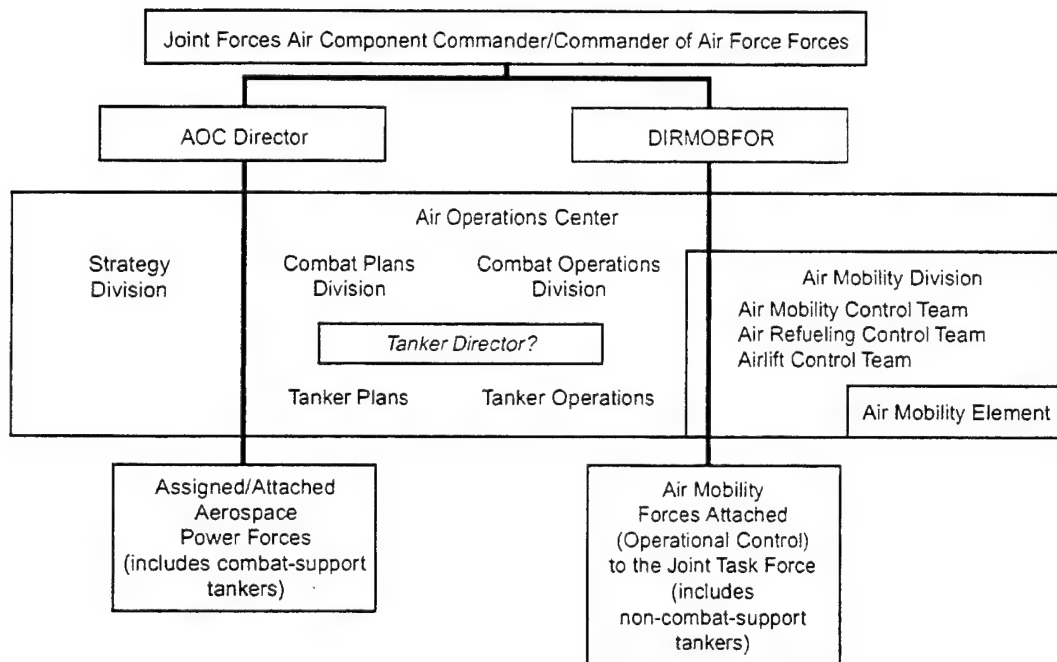


Figure 2. Proposed Change to JFC Command and Control Structure³⁵

Conclusion

Air refueling presence in major operations has routinely been taken for granted. While the tankers always seem to materialize, doctrine for their command and control is seriously flawed. Operation ALLIED FORCE's success should not be interpreted as meaning that all is well. Current doctrine did not pass muster concerning the C2 of Lt Gen Short's tanker "backbone." A second major theater conflict would have painfully highlighted the strains on the system. "Ad hoc" situational dependent refueling C2 structures should not be the CINC's or JFC's preferred method of doing business. Operational commanders' understanding of historical policy, advocacy of doctrinal revisions, and careful guidance of tanker C2 startup and evolution in future contingencies will be their best lessons from this paper. Implementation of the refinements proposed will go far toward ensuring air refueling capability in any future Joint Task Force operation.

Endnotes

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⁴ Joint Chiefs of Staff, *Joint Tactics, Techniques, and Procedures for Airlift Support of Joint Operations*, (Joint Pub 4-01.1) (Washington, D.C.: 20 July 1996), 1-5.

⁵ Richard D. Simpson, "Air Mobility Doctrine Implications of the Air War Over Serbia: An Interim AMC/XPD Assessment," Slide presentation, Scott AFB, IL, Dec 1999.

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⁷ Ibid.

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⁹ Bruno, "DIRMOBFOR"

¹⁰ Walter J. Boyne, *Beyond the Wild Blue: A History of the U.S. Air Force 1947-1997* (New York, NY: St Martin's Press, 1997), 41-43.

¹¹ Bruno, "DIRMOBFOR"

¹² Elliot A. Cohen, and others, *Gulf War Air Power Survey* (Washington, DC: US Government Printing Office, 1993), Vol II, appendix 4B.

¹³ Ibid., Vol II, part 1, 20-21.

¹⁴ An "air bridge" is an airborne line of communication linking CONUS and a theater, or multiple theaters. Multiple tanker refuelings along the ALOC allow for maximum intertheater payloads and non-stop capability for all types of assets. This increases the efficiency of joint deployments exponentially. All planned TPFDD flows assume tanker air bridge capability will be available.

¹⁵ Ibid, Vol III, part I, 128.

¹⁶ Ibid, Vol I, part 1, 20-21.

¹⁷ Ibid.

¹⁸ Ibid.

¹⁹ Ibid, Vol I, part2, 131-134.

²⁰ James K. Mathews, *General Walter Kross, Commander in Chief, United States Transportation Command and Air Mobility Command: An Oral History* (Scott Air Force Base IL: Office of History, U.S. Transportation Command and Air Mobility Command. U.S. Government Printing Office, 1999), 23-24.

²¹ See joint publications JP 4-01 *Joint Doctrine for the Defense Transportation System*, JP 3-17 *Joint Tactics, Techniques, and Procedures for Theater Airlift Operations* (current and draft), AFDD 2-6 *Air Mobility* (Current and draft) and others.

²² Joint Chiefs of Staff, *Department of Defense Dictionary of Military and Associated Terms* (Joint Pub 1-02) (Washington, D.C.: 15 April 1998), 132.

²³ U.S. Air Force, *Air Force Doctrine Document 2-6.2, Air Refueling*. (Washington, D.C.: 19 July 1999), 33-35.

²⁴ Hermsmeyer, Gregory, Capt USAFE/CCX "Air Refueling," powerpoint breifing, December, 1999.

²⁵ John A. Tirpak, "Airlift Reality Check," *Air Force Magazine*, December 1999, 35.

²⁶ William J. Begert, "Kosovo and Theater Mobility", *Airpower Journal*, Winter 1999, 11-21.

²⁷ Ibid.

²⁸ Richard D. Simpson, "Kosovo Operations--Doctrinal Implications." Point Paper, Scott AFB, IL, Dec 1999.

²⁹ Thomas Stickford, Operation ALLIED FORCE Tanker Director, telephone conversation with the author, 3 December 1999.

³⁰ Scott Mischo, OIC Vicenza CAOC Tanker Planning, telephone conversation with author, 25 January 2000.

³¹ Begert, 11-21.

³² U.S. Air Force. *Air Force Doctrine Document 2-6.2, Air Refueling*. (Washington, D.C.: 19 July 1999), 18.

³³ Stickford.

³⁴ U.S. Air Force. *Air Force Doctrine Document 2-6.2, Air Refueling*. (Washington, D.C.: 19 July 1999), Chapter 3.

³⁵ Begert, 11-21.

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